

THE VELIIDAE (HETEROPTERA) OF AMERICA
NORTH OF MEXICO—KEYS AND CHECK LIST

Cecil L. Smith and John T. Polhemus

Abstract.—Keys, supplemented with scanning electron micrographs and drawings, are presented for the five genera and 35 species of Veliidae of North America north of Mexico. Distributions and synonymies are given in a check list. A selected bibliography pertaining to these taxa is included.

Although the veliids are by far the most abundant of the surface-inhabiting Heteroptera and second only to the Gerridae in species diversity, they are usually ignored by the average collector and are poorly represented in most collections. This relative obscurity is due primarily to their small size (1-12 mm) and their penchant for living in cryptic habitats. Only the Rhagoveliinae are found on open stretches of water—*Rhagovelia* below the ripples and eddies of streams and *Trochopus* along shorelines of tropical bays and estuaries. The microveliine genus *Husseyella* shares the marine habitat with *Trochopus* and inhabits the margins of salt marshes and similar niches. In general, *Microvelia* are found on or near the margins of practically all still waters—ponds, lakes, temporary puddles, and the quieter portions of streams and rivers, where they secrete themselves among the debris, venturing out onto the open water rarely. Unlike the Rhagoveliinae, members of this genus are not totally restricted to the water surface and are commonly found running over nearby rocks and mud flats. Even though individuals of the veliine genus *Paravelia* (= *Velia* of authors) are the largest of the North American veliids, they are less often encountered because they do not usually inhabit the water surface, but are often found, instead, on emergent vegetation, and occasionally on vegetation some distance from water.

There are comparatively few veliid species in North America: Five genera with 35 included species. Of these, only the genus *Rhagovelia* has been adequately monographed (Bacon, 1956). The key to *Rhagovelia* presented here has been adapted, in part, from his paper.

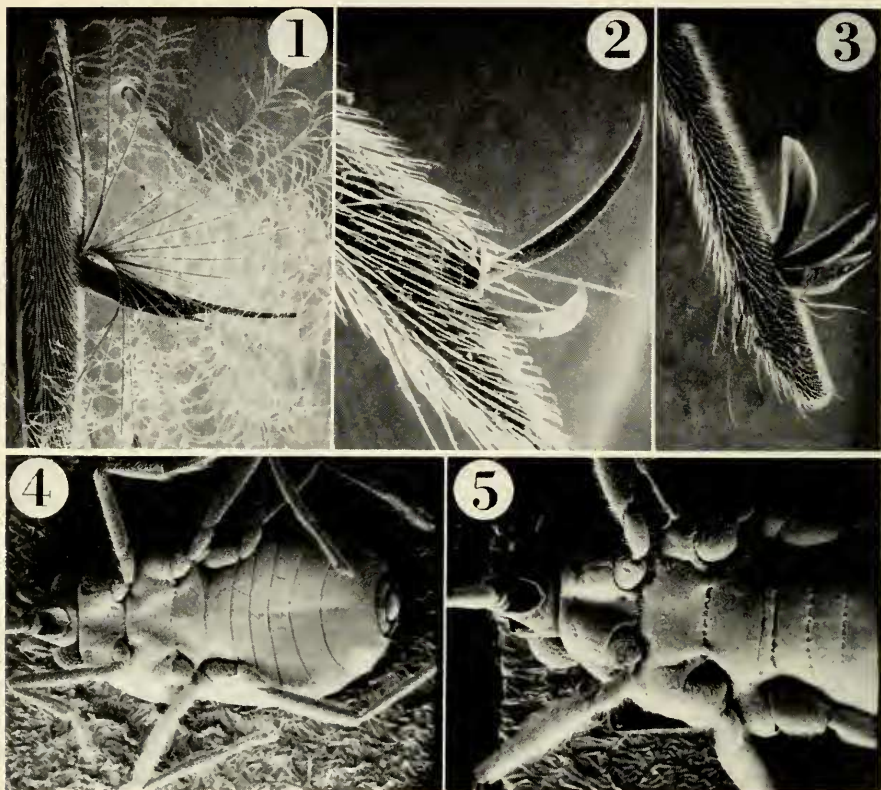
The Western Hemisphere *Microvelia* were reviewed by Torre-Bueno (1924a) and later revised by McKinstry (1933, unpublished). Torre-Bueno's paper encompassed only 22 of the currently valid 81 New World species. In addition to Torre-Bueno's key several regional keys to *Microvelia* have since been published (Bobb, 1974; Froeschner, 1962; Herring, 1950; Usinger, 1956; Wilson, 1958). Usinger's 1956 key to the *Microvelia* of California was largely based on McKinstry's unpublished work. A check list compiled by

Drake and Hussey (1955) is the most recent synoptic work on the genus. Smith has a monographic revision of the North and Central American *Microvelia* in progress, but since it will be some time before the results are published, the key presented here will hopefully suffice as an identification aid in the interim. The subgenera *Microvelia* (*Microvelia*) and *M.* (*Kirkaldya*) are separated by the vertically oriented, leaf-like, dorsal arolium found only in the latter. This arolium is often difficult to see, so it is not used as a character in the key. Because no consistent characters have yet been found for successfully separating alate individuals of *Microvelia sensu lato* or females of the subgenus *Kirkaldya*, the key is based primarily on apterous specimens and males of *Kirkaldya* species. However, this should result in only minimal inconvenience because the majority of specimens within most populations are apterous and males are present. The elimination of winged forms from the key has necessitated the omission of one species, *M. marginata* Uhler. This species is known in the U.S. only from a single alate specimen from Key West, Florida. *M. marginata* is prevalent throughout the Caribbean area, and this single U.S. record is probably based on a hurricane transported specimen. A similar occurrence following a tropical storm has been verified by Herring (1958) for *M. cubana* (= *M. portoricensis sensu* Herring, not Drake). The latter species quite possibly has adapted to and become established in southern Florida based on several collection records subsequent to Herring's original observation.

Other than basic descriptive work and a few extremely localized regional keys, the genus *Paravelia* has, until recently, been ignored. Members of this New World genus were considered congeneric with the Old World genus *Velia* until Polhemus (1976) revised their status. Generic concepts, distributions, and synonymies were reviewed by Polhemus but no comprehensive keys exist for the genus.

Key to the Genera of Veliidae of America North of Mexico

- 1. Middle tarsi deeply cleft, with leaflike claws and plumose hairs arising from base of cleft (Fig. 1). Rhagoveliinae 2
- Middle tarsi not deeply cleft and without plumose hairs arising from base of cleft 3
- 2. Hind tarsi 2-segmented, the basal segment very short. Apterous. Tropical America. Marine *Trochopus* Carpenter
[One species, *T. plumbeus* (Uhler)]
- Hind tarsi 3-segmented, the basal segment very short. Apterous or macropterous. Cosmopolitan. Riffles of streams and rivers or (rarely) lakes *Rhagovelia* Mayr
- 3. Tarsal formula 1:2:2. Microveliinae 4
- Tarsal formula 3:3:3. Veliinae *Paravelia* Breddin



Figs. 1-3. Tarsi. 1. *Rhagovelia obesa* (61 \times); 2. *Microvelia americana* (293 \times); 3. *Husseyella turmalis* (117 \times). Figs. 4-5. Ventral view of female *Microvelia* (31 \times). 4. *M. pulchella*; 5. *M. americana*.

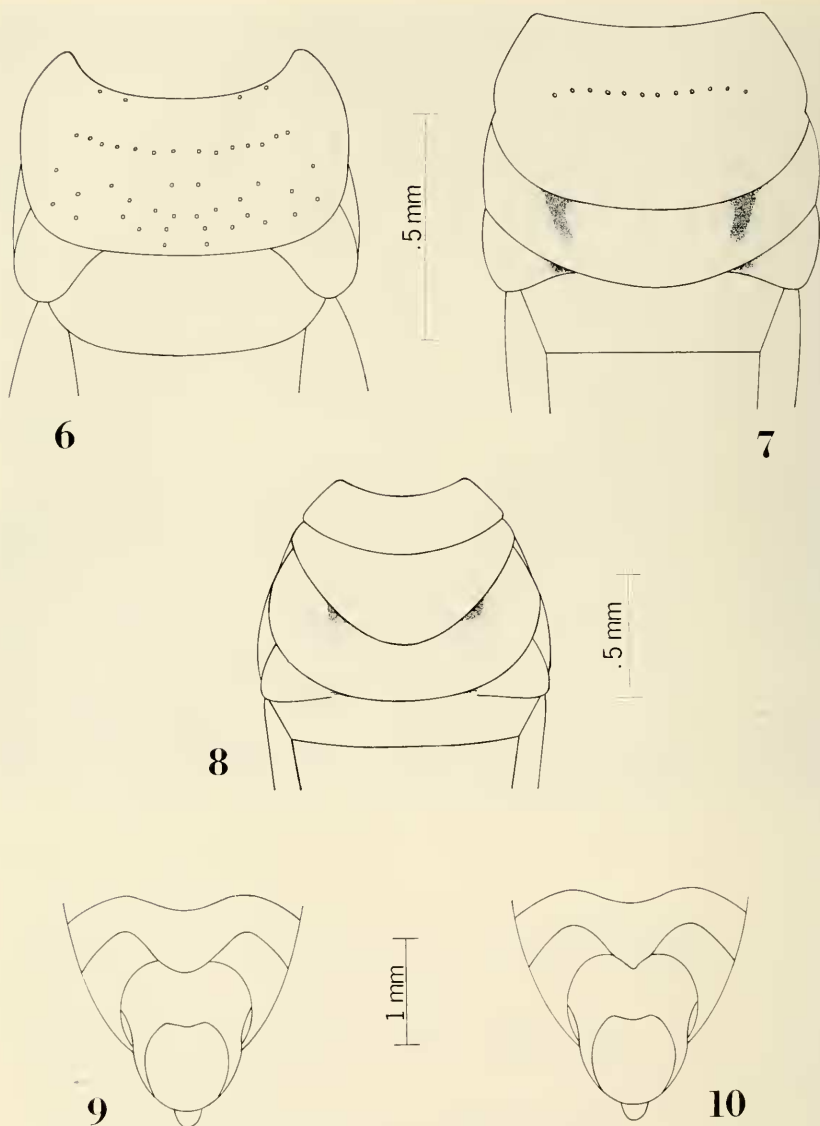
4. Middle tarsi with 4 leaflike blades arising from cleft (Fig. 3)
Husseyella Herring
 [One species, *H. turmalis* (Drake and Harris)]
 - Middle tarsi with narrow claws arising from cleft (Fig. 2)
Microvelia Westwood

Key to Apterous *Microvelia* of America North of Mexico

[Except for species keyed in couplets 8 through 13, all species belong to the subgenus *Microvelia* (*Microvelia*).]

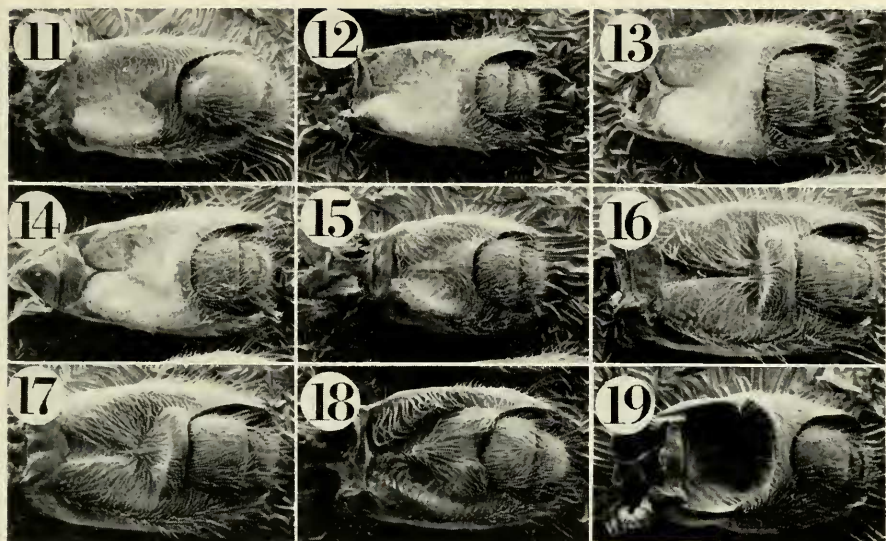
1. Pronotum covering entire thorax to metathoracic triangles, dorsal surface of thorax appearing 1-segmented (Fig. 6) 2
- Pronotum not covering entire thorax, at least 1 other thoracic segment exposed (Figs. 7, 8) 6

2. Minute, white, vestigial wing pads present; only 6 entire abdominal terga visible *atrata* Torre-Bueno
- Minute, white, vestigial wing pads absent; 7 entire abdominal terga visible 3
3. Blue to gray pruinose patches present on abdominal terga 2 and 3, and, usually, 6 and 7; orange-brown to dark reddish-brown species 4
- Blue to gray pruinose patches absent on all abdominal terga; color uniform sooty black (except orange transverse band across anterior lobe of pronotum) 5
4. Dorsum entirely covered with long erect pubescence, the majority of hairs equal in length to width of hind femur; 2nd genital segment of male without laterally directed caudal spines *fontinalis* Torre-Bueno
- Dorsum with only short pubescence, closely appressed to body; 2nd genital segment of male with a pair of short laterally projecting caudal spines *cerifera* McKinstrey
5. Distal segment of middle tarsi 20% longer than proximal segment; coxae dark brown; females with glabrous depressed area on lateral margin of pronotum *glabrosulcata* Polhemus
- Distal segment of middle tarsi subequal to proximal segment; coxae yellowish; female lacking glabrous depressed area on lateral margin of pronotum *austrina* Torre-Bueno
6. Pronotum short; dorsal surface of thorax apparently consisting of 3 segments (Fig. 8) 7
- Pronotum longer; dorsal surface apparently 2-segmented (Fig. 7) 14
7. Hind tibiae of males curved; females with wide groove between front coxae for reception of rostrum, interior edges sloped gradually, divergent posteriorly (Fig. 4); front coxae widely separated; length normally less than 2 mm (1.25–2.25 mm) *pulchella* Westwood
- Hind tibiae of males straight; females with narrow groove, barely wider than rostrum, interior edges more vertical, parallel (Fig. 5); front coxae close together; length greater than 2 mm (2.00–3.75 mm) (subgenus *Kirkaldya*—key for males only) 8
8. Distal ventral margin of 1st genital segment glabrous or with only very short pubescence (Figs. 11–14) 9
- Distal ventral margin of 1st genital segment with either a row or tufts of long hairs (Figs. 15–19) (note that the tuft of hairs on *M. americana* may occasionally be shortened and, thereby, obscured) 10
9. Distal ventral margin of 1st genital segment with a triangular glabrous area (Fig. 11) *torquata* Champion



Figs. 6-8. Dorsal thoracic segments—*Microvelia*. 6. *M. fontinalis*; 7. *M. signata*; 8. *M. americana*. Figs. 9-10. Terminal ventral abdominal segments—*Paravelia*. 9. *P. summersi*; 10. *P. alvaradana*.

- Posterior ventral margin of 1st genital segment with only a narrow, transverse, glabrous area (Figs. 12-14) *paludicola* Champion
- 10. Hairs on ventral surface of 1st genital segment arranged in 2 fairly distinct lateral tufts (Figs. 18, 19) 11



Figs. 11–19. *Microvelia* (*Kirkaldya*) male genital capsules (56 \times). 11. *M. torquata*; 12. *M. paludicola*—Miss.; *M. paludicola*—Ga.; 14. *M. paludicola*—Tex.; 15. *M. americana*; 16. *M. gerhardi*; 17. *M. californiensis*; 18. *M. beameri*; 19. *M. fasciculifera*.

- Hairs on ventral surface of 1st genital segment aligned in a continuous pattern (Figs. 15–17) 12
- 11. Venter of last abdominal segment with a short erect tubercle
fasciculifera McKinstrey
- Venter of last abdominal segment without tubercle *beameri* McKinstrey
- 12. Distal ventral margin of 1st genital segment with a raised transverse ridge (Figs. 16, 17) 13
- Distal ventral margin of 1st genital segment without a raised transverse ridge (Fig. 15) *americana* (Uhler)
- 13. Middle of front femora distinctly swollen and blackened; inner surface of front femora flattened *gerhardi* Hussey
- Middle of front femora not swollen and blackened; inner surface not flattened *californiensis* McKinstrey
- 14. Antennal segment IV subequal (90%+) to width of head through eyes; middle $\frac{1}{3}$ of 2nd abdominal tergum with darkened area; males with large acute tubercle on 2nd abdominal sternum
albonotata Champion
- Antennal segment IV not longer than 75% of width of head through eyes; 2nd abdominal tergum without darkened area; males without ventral tubercle 15
- 15. Last 3 abdominal terga with broad shining areas, covering 25–90% of at least 1 segment 16

- Last 3 abdominal terga with at most a thin, shiny, medial line present on last 2 segments (width of line, at most, 10% of maximum width of segment) 17
- 16. Silvery pubescence present on head around eyes and base of antennae, and shoulders of pronotum *buenoi* Drake
 - Silvery pubescence absent on head around eyes and base of antennae, and shoulders of pronotum *signata* Uhler
- 17. Tibia of mesothoracic leg subequal in length (90%+) to width of head through eyes *cubana* Drake
 - Tibia of mesothoracic leg less than 75% as long as width of head through eyes *hinei* Drake

Key to *Parvelia* of America North of Mexico
(= *Velia* of American Authors)

- 1. Body slender; genital segments of both sexes acuminate; wing pads or wings basally brown, without white markings *stagnalis* (Burmeister)
 - Body robust; genital segments button-like (♀) or forming a blunt angulate projection (♂) but not acuminate; wing pads or basal wing spot white, conspicuous 2
- 2. Collar projecting, angulate behind eyes; pronotum not set off from collar by conspicuous row of pits *beameri* (Hungerford)
 - Collar not projecting, not angulate behind eyes; pronotum set off from collar by a more or less conspicuous row of pits 3
- 3. First antennal segment approximately 1.25× as long as width of head through eyes, and 1.5× as long as 2nd antennal segment (southeastern U.S.) *brachialis* (Stål)
 - First antennal segment approximately 1.5× as long as width of head through eyes, and 2× as long as 2nd antennal segment (southwestern U.S.) 4
- 4. Ventral projection of 7th abdominal sternum blunt (Fig. 9) *summersi* (Drake)
 - Ventral projection of 7th abdominal sternum acuminate (Fig. 10) *alvaradana* (Drake and Hottes)

Key to *Rhagovelia* of America North of Mexico

- 1. Genital segments in both sexes mucronate; female connexiva produced caudad from 7th tergum as long mucronate processes *becki* Drake and Harris
 - Genital segments bluntly rounded or triangular but not mucronate; female connexiva not produced caudad as long mucronate processes 2
- 2. Female midfemur transversely constricted at middle; males with-

out median shining areas on dorsum of abdominal segments

choreutes Hussey

- Female midfemur may be dorsoventrally flattened but not transversely constricted at middle; males with at least 7th (last) abdominal segment having median dorsal shining area 3
- 3. Female midfemur dorsoventrally flattened; connexiva reflexed for the last 4 segments. Males with dorsal median shining areas on at least the last 3 abdominal segments; if shining areas are small, posterior femur is not greatly incrassate 5
- Female midfemur not flattened; abdomen tapering evenly to apex, connexiva not reflexed. Males with dorsal median shining areas on only abdominal segment 7; posterior femora greatly incrassate 4
- 4. Venter of abdomen orange brown over at least last 3 segments, thickly dotted with minute black conical setae. Males with abdominal venter carinate over 1st 3 segments *varipes* Champion
- Venter of abdomen blackish grey over all but 7th segment, without evident minute black setae. Male abdominal venter not carinate *torreyana* Drake and Hussey
- 5. Apterous female with apex of pronotum continued into a long, elevated process. Apterous male pronotum triangular, its apex extending over metanotum, mesonotum exposed at sides *oriander* Parshley
- Apterous female with pronotum not produced at apex. Pronotum of apterous male not extending over metanotum 6
- 6. Connexiva of apterous female diverging over apex of last abdominal segment, apex of connexiva rounded as seen from side. Venter of last abdominal segment of male flattened medially with prominent hairy ridges at each side *distincta* Champion
- Connexiva of apterous female close together or meeting at apex; apex of connexiva forming at least a 90° angle as seen from side. Male venter not flattened and without hairy ridges on 7th segment 7
- 7. Abdominal dorsum of apterous male with only traces of median shining areas on a few segments in addition to segment 7. Mesonotum of apterous female tumid *rivale* Torre-Bueno
- Abdominal dorsum of apterous male and dorsum of metanotum with broad median shining areas; posterior trochanter of male armed with several small teeth. Mesonotum of apterous female tumid only at sides or not tumid 8
- 8. Connexival margins of apterous female with 1st 2 segments curved; exposed portion of mesonotum longer than exposed portion of metanotum *obesa* Uhler
- Connexival margins of apterous female with 1st 2 segments straight; exposed portion of mesonotum shorter than exposed portion of metanotum *knighti* Drake and Harris

Check List—Veliidae of America North of Mexico

Genus *Husseyella* Herring 1955

- | | |
|---|---|
| <i>turmalis</i> (Drake and Harris) 1933 | Southern Florida,
Mexico, Caribbean,
Middle America |
|---|---|

Genus *Microvelia* Westwood 1834

- | | |
|--------------------------------------|--|
| <i>albonotata</i> Champion 1898 | Canada, U.S. east of
Rocky Mts., Mexico
to Peru, Caribbean |
| <i>americana</i> (Uhler) 1884 | Eastern U.S., west to
Nebraska and Texas |
| <i>atrata</i> Torre-Bueno 1916 | Georgia and Florida,
west to Louisiana |
| <i>austrina</i> Torre-Bueno 1924a | Southeastern U.S., |
| <i>parallela</i> Blatchley 1925 | Mexico |
| <i>beameri</i> McKinstry 1937 | Southwestern U.S.,
Northern Mexico,
Jamaica |
| <i>buenoi</i> Drake 1920a | Northern half of U.S.,
California, Canada, Alaska,
(Florida?) |
| <i>californiensis</i> McKinstry 1937 | California, Oregon,
Baja California |
| <i>cerifera</i> McKinstry 1937 | Iowa, Kansas, Nebraska,
Colorado, New Mexico,
Utah, Arizona, Nevada,
California |
| <i>cubana</i> Drake 1951a | Southern Florida, Cuba,
Dominican Republic |
| <i>fasciculifera</i> McKinstry 1937 | Texas, New Mexico,
Arizona, Mexico |
| <i>fontinalis</i> Torre-Bueno 1916 | U.S. east of Mississippi
River |
| <i>gerhardi</i> Hussey 1924 | Western U.S., |
| <i>americana</i> Uhler 1895 | Northern Mexico |
| <i>glabrosulcata</i> Polhemus 1974 | Arizona, Mexico |
| <i>hinei</i> Drake 1920b | Canada to Argentina |

- marginata* Uhler 1893
pudoris Drake and Harris 1936
paludicola Champion 1898
alachuana Hussey and Herring 1950
pulchella Westwood 1834
capitata Guérin-Meneville 1857
borealis Torre-Bueno 1916
incerta Kirby 1890
robusta Uhler 1894
signata Uhler 1894b
oreades Drake and Harris 1928
setipes Champion 1898
torquata Champion 1898
- Southern Florida,
 Caribbean, Mexico,
 Panama, Venezuela, Peru
 Southeastern U.S.,
 Kentucky, Tennessee,
 Arkansas, Oklahoma,
 Kansas, Texas, New
 Mexico, Mexico,
 Middle America, Caribbean
 Canada to Argentina,
 Caribbean
 Southwestern U.S.,
 Mexico, Middle America
 Southwestern U.S.,
 Mexico, Middle America

Genus *Paravelia* Breddin 1898

- alvaradana* (Drake and Hottes) 1952
beameri (Hungerford) 1929
brachialis (Stål) 1860
australis (Torre-Bueno) 1916
stagnalis (Uhler) 1894
 (nec. Burmeister)
stagnalis (Burmeister) 1835
paulineae (Wilson) 1953
watsoni (Drake) 1919
summersi (Drake) 1951b
- Northwestern Mexico
 (Arizona?)
 Arizona
 Southeastern U.S.,
 Oklahoma, Texas,
 Mexico, to (?) Argentina,
 Caribbean
 Eastern U.S., Cuba
 Arizona

Genus *Rhagovelia* Mayr 1865

- becki* Drake and Harris 1936
choreutes Hussey 1925
distincta Champion 1898
excellentis Drake and Harris 1927
mexicana Signoret 1877 (nomen nudum)
- Texas, Nevada, Mexico
 Southeastern U.S. to New
 Mexico, California
 Western U.S., Mexico,
 Middle America

<i>d. arizonensis</i> Gould 1931	
<i>d. cadyi</i> Gould 1931	
<i>d. harmonia</i> Gould 1931	
<i>d. modesta</i> Gould 1931	
<i>d. proxima</i> Gould 1931	
<i>d. valentina</i> Gould 1931	
<i>knighti</i> Drake and Harris 1927	Arkansas, Missouri, Oklahoma
<i>obesa</i> Uhler 1871	Eastern U.S., Southeastern Canada
<i>arctoa</i> Torre-Bueno 1924b	
<i>flavicineta</i> Torre-Bueno 1924b	
<i>oriander</i> Parshley 1922	Midwestern U.S.
<i>rivale</i> Torre-Bueno 1924b	Colorado, Kansas, Iowa, Missouri, Oklahoma, Nebraska, Texas
<i>torreyana</i> Drake and Hussey 1957	Western Florida
<i>varipes</i> Champion 1898	Arizona, New Mexico,
<i>beameri</i> Gould 1931	Mexico

Genus *Trochopus* Carpenter 1898

<i>plumbeus</i> (Uhler) 1894a	Florida (Gulf and Atlantic Coasts), Caribbean, Atlantic coasts of Mexico, Middle America and Northern South America
<i>marinus</i> Carpenter 1898	

Acknowledgments

We would like to extend our gratitude to Ms. Diane A. Hurd, of the University of Georgia, for her kind assistance in the preparation of the scanning electron micrographs, and to Drs. H. H. Ross and W. T. Atyeo, also of the University of Georgia, for their most helpful suggestions on improving the manuscript.

Literature Cited

- Bacon, J. A. 1956. A taxonomic study of the genus *Rhagovelia* (Hemiptera, Veliidae) of the western hemisphere. Univ. Kans. Sci. Bull. 38, Pt. 1(10):695-913.
- Bobb, M. L. 1974. The insects of Virginia: No. 7. The aquatic and semi-aquatic Hemiptera of Virginia. Research Div. Bull. 87, Va. Polytech. Inst. and State Univ.: 1-195.
- Burmeister, H. 1835. Handbuch der Entomologie. Vol. 2. Hemiptera. Berlin.

- Champion, G. C. 1898. *Biologia Centrali-Americana*, Insecta, Rhynchota (Hemiptera-Heteroptera). Vol. II:117-158, 338-383.
- Drake, C. J. 1920a. An undescribed water-strider from the Adirondacks. *Bull. Brooklyn Entomol. Soc.* 15(1):19-21.
- . 1920b. Water striders new to the fauna of Ohio, including the description of a new species. *Ohio J. Sci.* 20(6):205-208.
- . 1951a. New Neotropical water-striders (Hemiptera-Veliidae). *Great Basin Nat.* 11(1-2):37-42.
- . 1951b. New water striders from the Americas (Hemiptera: Veliidae). *Revista Entomol. Rio de Janeiro* 22(1-3):371-378.
- Drake, C. J., and H. M. Harris. 1927. Notes on the genus *Rhagovelia*, with descriptions of six new species. *Proc. Biol. Soc. Wash.* 40:131-138.
- . 1933. New American Veliidae (Hemiptera). *Proc. Biol. Soc. Wash.* 46:45-53.
- . 1936. Notes on American water-striders. *Proc. Biol. Soc. Wash.* 49:105-108.
- Drake, C. J., and F. C. Hottes. 1952. Concerning some Mexican Veliidae (Hemiptera). *Proc. Biol. Soc. Wash.* 65:85-88.
- Drake, C. J., and R. F. Hussey. 1955. Concerning the genus *Microvelia* Westwood, with descriptions of new species and a checklist of the American forms (Hemiptera: Veliidae). *Florida Entomol.* 38(3):95-115.
- . 1956. Notes on some American *Rhagovelia*, with descriptions of two new species (Hemiptera: Veliidae). *Occ. Pap. Mus. Zool. Univ. Mich.* 580:1-6.
- Froeschner, R. C. 1962. Contributions to a synopsis of the Hemiptera of Missouri, Part V. Hydrometridae, Gerridae, Veliidae, Saldidae, Ochteridae, Gelastocoridae, Naucoridae, Belostomatidae, Nepidae, Notonectidae, Pleidae, Corixidae. *Amer. Midl. Nat.* 67(1):208-240.
- Herring, J. L. 1950. The aquatic and semiaquatic Hemiptera of northern Florida. Part 2: Veliidae and Mesoveliidae. *Florida Entomol.* 33(4):145-150.
- . 1955. A new American genus of Veliidae (Hemiptera). *Florida Entomol.* 38(1):21-25.
- . 1958. Evidence for hurricane transport and dispersal of aquatic Hemiptera. *Pan-Pac. Entomol.* 34(3):174-175.
- Hungerford, H. B. 1929. A new *Velia* from Arizona with notes on other species (Hemiptera-Veliidae). *Ann. Entomol. Soc. Am.* 22(4):759-761.
- Hussey, R. F. 1924. A new North American species of *Microvelia* (Hem.). *Bull. Brooklyn Entomol. Soc.* 19(5):164-165.
- . 1925. Some new or little-known Hemiptera from Florida and Georgia. *J. N.Y. Entomol. Soc.* 33:61-69.
- McKinstry, A. P. 1933. Preliminary studies in *Microvelia* of the Western Hemisphere. M.A. Thesis, Univ. Kansas, Lawrence, 72 pp. + 20 pl. (unpublished).
- . 1937. Some new species *Microvelia* (Veliidae, Hemiptera). *J. Kans. Entomol. Soc.* 10(1-2):30-41.
- Parshley, H. M. 1921. On the genus *Microvelia* Westwood (Hemiptera—Veliidae). *Bull. Brooklyn Entomol. Soc.* 16:87-93.
- . 1922. Report on a collection of Hemiptera-Heteroptera from South Dakota. *South Dakota State Coll. Tech. Bull.* 2:1-22.
- Polhemus, J. T. 1974. The *austrina* group of the genus *Microvelia* (Hemiptera: Veliidae). *Great Basin Nat.* 34(3):207-217.
- . 1976. A reconsideration of the status of the genus *Parvelia* Breddin, with other notes and a check-list of species (Veliidae: Heteroptera). *J. Kans. Entomol. Soc.* 49(4):509-513.

- . 1977. Type-designations and other notes concerning Veliidae (Insecta: Hemiptera). *Proc. Entomol. Soc. Wash.* 79(4):637–648.
- Stål, C. 1860. Bidrag till Rio Janeiro Traktens Hemipterfauna. *Svenika Vet. -Ak. Handl.* 2(7):1–84.
- Torre-Bueno, J. R. de la. 1916. The Veliinae of the Atlantic states. *Bull. Brooklyn Entomol. Soc.* 11(3):52–61.
- . 1923. Taxonomic characters in *Microvelia* Westw. *Bull. Brooklyn Entomol. Soc.* 18(4):138–143.
- . 1924a. A preliminary survey of the species of *Microvelia* Westwood (Veliidae, Heteroptera) of the Western World, with description of a new species from the southern United States. *Bull. Brooklyn Entomol. Soc.* 19(5):186–194.
- . 1924b. The Nearctic *Rhagoveliae* (Heteroptera; Veliidae). *Trans. Am. Entomol. Soc.* 50:243–252.
- Uhler, P. R. 1871. Notices of some Heteroptera in the collection of Dr. T. W. Harris. *Proc. Boston Soc. Nat. Hist.* 14:93–109.
- . 1884. Order VI.—Hemiptera: sub-order III.—Heteroptera. In *Standard Natural History*, II:249–296. S. E. Cassino & Co., Boston.
- . 1893. A list of the Hemiptera-Heteroptera collected in the island of St. Vincent by Mr. Herbert H. Smith; with descriptions of new genera and species. *Proc. Zool. Soc. London* 1893:705–719.
- . 1894a. On the Hemiptera-Heteroptera of the island of Granada, West Indies. *Proc. Zool. Soc. London* 1894:167–224.
- . 1894b. Observations upon the heteropterous Hemiptera of Lower California, with descriptions of new species. *Proc. Calif. Acad. Sci., 2nd Ser.*, 4: 223–295.
- Usinger, R. L. (ed.) 1956. *Aquatic Insects of California*. Univ. Calif. Press, Berkeley. 508 pp.
- Westwood, J. O. 1834. Mémoire sur les genres *Xylocoris*, *Hylophila*, *Microphysa*, *Leptopus*, *Velia*, *Microvelia* et *Hebrus*, avec quelques observations sur les Amphibicorisae de M. Dufour et sur l'état imparfait, mais identique de certaines espèces. *Ann. Entomol. Soc. Fr.* (1)3:637–653.
- Wilson, C. A. 1958. Aquatic and semiaquatic Hemiptera of Mississippi. *Tulane Studies Zool.* 6(3):115–170.

(CLS) Department of Entomology, University of Georgia, Athens, Georgia 30602; and (JTP) 3115 S. York, Englewood, Colorado 80110.